MICHELL Instruments

# Easidew PRO XP Moisture Transmitter User's Manual

Sensorik
Messtechnik
nbn ELEKTRONIK
Handelsgesellschaft m.b.H.
A-8010 Graz, Riesstraße 146
Tel.: +43 316 40 28 05, Fax: 40 25 06

Please fill out the form(s) below for each instrument that has been purchased.

Use this information when contacting Michell Instruments for service purposes.

| | |
|---|---|
| Instrument | |
| Code | |
| Serial Number | |
| Invoice Date | |
| Location of Instrument | |
| Tag No | |

| | |
|---|---|
| Instrument | |
| Code | |
| Serial Number | |
| Invoice Date | |
| Location of Instrument | |
| Tag No | |

| | |
|---|---|
| Instrument | |
| Code | |
| Serial Number | |
| Invoice Date | |
| Location of Instrument | |
| Tag No | |

# Easidew PRO XP

For Michell Instruments' contact information please go to
www.michell.com

© 2014 Michell Instruments
This document is the property of Michell Instruments Ltd. and may not be copied or otherwise reproduced, communicated in any way to third parties, nor stored in any Data Processing System without the express written authorization of Michell Instruments Ltd.

## Contents

Safety ..... vi
Electrical Safety ..... vi
Hazardous Area Safety ..... viii
Pressure Safety ..... ix
Toxic Materials ..... ix
Repair and Maintenance ..... ix
Calibration ..... ix
Safety Conformity ..... ix
Abbreviations ..... x

1 INTRODUCTION ..... 1
1.1 Features ..... 1

2 INSTALLATION ..... 2
2.1 Unpacking the Instrument ..... 2
2.1.1 Wall Mounting ..... 3
2.1.2 Pipe Mounting ..... 5
2.2 Gas Media Process Connection ..... 6
2.3 Liquid Media Process Connection ..... 7
2.3.1 Sample Block (Optional) ..... 8
2.4 Preparation of the Sensor Cable ..... 9
2.4.1 Terminal Block Connection - Easidew PRO XP EX1 (Non-Display) ..... 9
2.4.2 Terminal Block Connection - Easidew PRO XP EX2 (Display) ..... 10
2.5 Electrical Schematic ..... 11
2.5.1 Easidew PRO XP EX1 (Non-Display) ..... 11
2.5.2 Easidew PRO XP EX2 (Display) ..... 12
2.5.3 Electrical Boundaries ..... 12

3 OPERATION ..... 13
3.1 Measurement and Configuration ..... 13
3.2 Sampling Hints ..... 14

4 MAINTENANCE ..... 15

## Figures


*Figure 1 Sensor Cap Removal ..... 2*
*Figure 2 Dimensions Easidew PRO XP EX1 (Non-Display) - Wall Mounting ..... 3*
*Figure 3 Dimensions Easidew PRO XP EX2 (Display) - Wall Mounting ..... 4*
*Figure 4 Transmitter Mounting - Pipe or Duct ..... 5*
*Figure 5 Dimensions Easidew PRO XP EX1 (Non-Display) - Pipe or Duct ..... 5*
*Figure 6 Dimensions Easidew PRO XP EX2 (Display) - Pipe or Duct ..... 5*
*Figure 7 Transmitter Direct Mounting ..... 6*
*Figure 8 Transmitter Mounting - Sample Block ..... 8*
*Figure 9 Outline Dimensions - Sample Block ..... 8*
*Figure 10 Wire and Crimp Details ..... 9*
*Figure 11 Terminal Block Connection - Easidew PRO XP EX1 (Non-Display) ..... 9*
*Figure 12 Grub Screw ..... 10*
*Figure 13 Terminal Block Mounting - Easidew PRO XP EX2 (Display) ..... 10*
*Figure 14 Grub Screw ..... 11*
*Figure 15 Electrical Schematic - Easidew PRO XP EX1 (Non-Display) ..... 11*
*Figure 16 Electrical Schematic - Easidew PRO XP EX2 (Display) ..... 12*
*Figure 17 Maximum Load of Easidew PRO XP - Including Cable Resistance ..... 12*
*Figure 18 Indication of Dead Space ..... 14*
*Figure 19 Replacement of Sensor Guard ..... 15*


## Appendices


Appendix A Technical Specifications ..... 17
Appendix B Hazardous Area Certification ..... 20
B.1 Special Conditions of Use ..... 20
Appendix C EC Declaration of Conformity ..... 22
Appendix D Fully Programmable Loop Powered 4-Digit LED Display Meter ..... 24
D.1 Display Meter Parameter Limits ..... 24
D.2 Display Meter Operating Range ..... 24
D.3 Display Meter View ..... 24
D.4 Re-Configuration Steps ..... 25
D.5 Moisture Scaling Label ..... 26
D.6 Technical Specifications - EX2 LED Display ..... 27
Appendix E Quality, Recycling & Warranty Information ..... 29
E.1 Pressure Equipment Directive (PED) 97/23/EC ..... 29
E.2 Recycling Policy ..... 29
E.3 WEEE Compliance ..... 29
E.4 RoHS2 Compliance ..... 30
E.5 Warranty ..... 30
E.6 REACH Compliance ..... 31
E.7 Calibration Facilities ..... 31
E.8 Return Policy ..... 32
E.9 Manufacturing Quality ..... 32
Appendix F Return Document & Decontamination Declaration ..... 34

## Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated. Do not apply values greater than the maximum value stated.

This manual contains operating and safety instructions, which must be followed to ensure the safe operation and to maintain the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage. Use qualified personnel and good engineering practice for all procedures in this manual.

**Where this symbol appears in the following sections it is used to indicate areas where potentially hazardous operations need to be carried out and where particular attention to personal and personnel safety must be observed.**

## Electrical Safety

**WARNING:**
**During the installation of this product ensure that all applicable national and local electrical safety regulations are observed.**

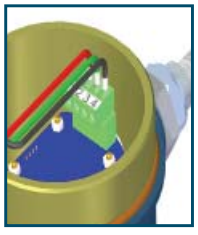
**WARNING:**
**Isolate the power prior to installation.**

**WARNING:**
**Always ensure that power is switched off prior to accessing the product for any purpose other than normal operation or prior to disconnecting any cables.**

In compliance with IEC 61010 Electrical Safety Standard the following applies to this product:

**Equipment ratings:**

This equipment must be supplied with a voltage between the range of 14 to 28 V DC. Maximum power rating is 1 W.



The power is connected via PL2 on the pcb.

The input and output connector is a 2-part pcb mounted type, rated at 300 V, 10 A.

The detachable, screw terminal half of each connector is designed to accept 0.5-2.5mm$^2$ [24 -12 AWG] stranded or solid conductors (non-display version only).

Any power connection cable should have a minimum 0.5mm insulation and be rated at 300 V. Ensure the power supply can deliver sufficient power consumption requirement.

Ensure any power supply terminals and voltages are suitably separated from the other I/O requirements of this product.

Before applying power, perform a continuity test to ensure that the power supply screen and product are effectively connected to the protective Earth.

The protective Earth terminal is mounted externally and the Earth wire connected to it should never be disconnected. The product enclosure is supplied with a 5mm diameter external Earth connection at the lower right hand side. At installation, connect this Earth connection to plant Earth by a minimum 4mm$^2$ earthing bonding.

This product is designed to operate, as a minimum, between a temperature range of -5°C and +40°C, in maximum 80% relative humidity for temperatures up to +31°C decreasing linearly to 50% RH at 50°C. Supply voltages of ±10% and transient over voltages up to Overvoltage Category II. Pollution Degree 2. Altitudes up to 2,000 meters. Outdoor mounting is permitted using suitably rated glands equivalent to NEMA 4 / IP66. See Technical Specification Appendix in this manual for full operating parameters. Do not remove or exchange any of the cables or electrical components supplied with this product. To do so will invalidate all warranties. There are no additional or special electrical safety requirements other than those referred to in this manual.

Refer to the relevant sections of this manual for the location and mounting details.

Installation of this equipment should include the provision of a suitable and locally positioned power isolation switch or circuit breaker. Indication of the purpose of the switch or circuit breaker is strongly recommended. An over-current protection device should be rated to a maximum of 3 A.

Ensure this equipment and all power isolation devices are installed in a location and position that allows safe and easy access to their operation and is adequate to rigidly support the equipment.

Do not install this equipment in a location that would expose it impact or high levels of vibration.

Operation of this equipment, other than in a manner as specified by the manufacturer, may impair the safety protections provided.

The safe installation of this equipment and any system incorporating this equipment is the responsibility of the installer. Ensure local regulations and requirements are referred to prior to any installation commencing.

## Hazardous Area Safety

Appendix B of this manual refers to the Hazardous Area Certification of this product.

This product is fitted with a marking label that contains Hazardous Area information pertinent to the suitable location and installation.

During all installation and operation activities local regulations and permitted working routines must be observed. Installation should only be performed by competent personnel and in accordance with IEC/EN 60079-14:2008 or local equivalent.

Repair and servicing of this equipment must only be carried out by the manufacturer.

Supplied separately to the manual is an Installation and Maintenance Information Sheet.

**WARNING:**
**This product is Certified safe for use in a Zone 1 and Zone 2 and Class I, Zone 1 and Class I, Division 1 area only. This product must not be installed or used within a Zone 0 area.**

**WARNING:**
**This product must not be operated within an explosive atmosphere greater than 1.1 bar absolute.**

**WARNING:**
**This product must not be operated with enriched Thermal Conductivity gas samples (more than 21% Thermal Conductivity content).**

**WARNING:**
**This product must not be operated outside of the temperature range of -20°C and +70°C.**

## Pressure Safety

**WARNING:**

**This product is used in conjunction with pressurized gases. Observe pressurized gas handling precautions.**

**WARNING:**

**Pressurized gas is dangerous. Pressurized gas should only handled by suitably trained personnel.**

The Easidew PRO XP requires pressurized gas to be connected to it. Observe pressurized gas handling regulations and only suitable trained personnel should carry out task that include the use of pressurized gas mediums.

DO NOT permit pressures greater than the safe working pressure to be applied to the instrument. The specified safe working pressure for this instrument is 450 barg (6525 psig) max.

## Toxic Materials

The use of hazardous materials in the construction of this instrument has been minimized. During normal operation it is not possible for the user to come into contact with any hazardous substance which might be employed in the construction of the instrument. Care should, however, be exercised during maintenance and the disposal of certain parts.

Long exposure to, or breathing of the calibration gases, may be dangerous.

## Repair and Maintenance

The instrument must be maintained either by the manufacturer or an accredited service agent. For Michell Instruments' worldwide offices contact information go to www.michell.com.

## Calibration

Prior to shipment, the analyzer undergoes stringent factory calibration to traceable standards. Due to the inherent stability of the instrument, regular field calibration is not required under normal operating conditions. The analyzer should perform reliably for many years with just basic maintenance and housekeeping.

Michell Instruments can provide a fully traceable factory calibration service for the instrument and it is recommended that this is considered at intervals of every 12 months of the instrument's life. Please contact your local Michell Instruments' office or representative for further details (www.michell.com).

## Safety Conformity

This product carries the CE mark and meets the requirements of relevant European safety directives.

## Abbreviations

The following abbreviations are used in this manual:

| | |
|---|---|
| A | ampere |
| A/F | across flats |
| barg | pressure unit (=100 kP or 0.987 atm) gauge |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| dp | dew point |
| DC | direct current |
| EU | European Union |
| fps | feet per second |
| HDPE | high-density polyethylene |
| ins | inches |
| I/O | Input/Output |
| ISO | International Organization for Standardization |
| K | Kelvin unit of temperature measurement |
| lb/MMSCF | pounds of water per million standard cubic feet of gas |
| lbf-ft | pound foot |
| Nl/min | normal liters per minute |
| m | meters |
| mA | milliampere |
| $mg/m^3$ | milligrams per cubic meter |
| mm | millimeter |
| $mm^2$ | millimeter squared |
| Mpa | megapascal |
| m/sec | meters per second |
| Nm | Newton meter |
| pcb | printed circuit board |
| psig | pounds per square inch (gauge) |
| $ppm_V$ | parts per million by volume |
| $ppm_W$ | parts per million by weight |
| PTFE | Polytetrafluoroethylene |
| Ra | roughness average (unit of measure of surface finish) |
| RH | relative humidity |
| scfh | standard cubic feet per hour |
| UNF | unified fine thread |
| µm | micrometer |
| " | inches |
| % | percentage |
| V | Volts |

# 1 INTRODUCTION

The Easidew PRO XP has been manufactured, tested and calibrated to the highest available standards and should arrive in perfect working order, ready for installation into a gas or liquid measurement application.

For questions about the instrument or how to install and operate it, contact your local representative. Refer to www.michell.com for details of Michell Instruments' worldwide offices' contact information.

There are two versions of the Easidew PRO XP:

| | |
|---|---|
| Easidew PRO XP EX1 | No display |
| Easidew PRO XP EX2 | With display |

## 1.1 Features

The Easidew PRO XP is a continuous, on-line, 4-20 mA transmitter for the measurement of moisture content in air, other non-corrosive gases and non-polar liquids. It is designed specifically for use within Zone 1 and Zone 2 and Class I, Zone 1 and Class I, Division 1 area only.

The Easidew PRO XP key features are:

- Measurement ranges -110 up to +20°Cdp (-166 to +68°Fdp)
- Global explosion / flameproof certification
- Accuracy ±1°Cdp
- 2-wire 4-20 mA output
- Traceable 13-point calibration certificate
- 450 bar (6526 psig) pressure rating
- 3/4" UNF industry standard process connection
- EN 10204 3.1 material certification
- Moisture in gases and liquids
- Optional integral display meter

# 2 INSTALLATION

## 2.1 Unpacking the Instrument

On delivery, please check that all the following standard components are present in the packing box:

- Easidew PRO XP Transmitter (EX1 - Non-display OR EX2 - Display)
- Certificate of calibration
- 3 off bootlace ferrules
- 1.5mm A/F allen key
- 1 off conduit entry blanking plug (fitted hand tight)
- User's manual
- Installation and maintenance information sheet
- Sample block (optional)
- Pipe mounting bracket (optional)
- EN10204 3.1 material certificates (optional)

The Easidew PRO XP is protected within the main packaging with a green cap protecting the sensor guard with a desiccant capsule inside, and a plastic cap inside the cable entry opening (see *Figure 1).*

Remove and retain these items prior to commissioning.

**DO NOT HANDLE THE SENSOR GUARD**

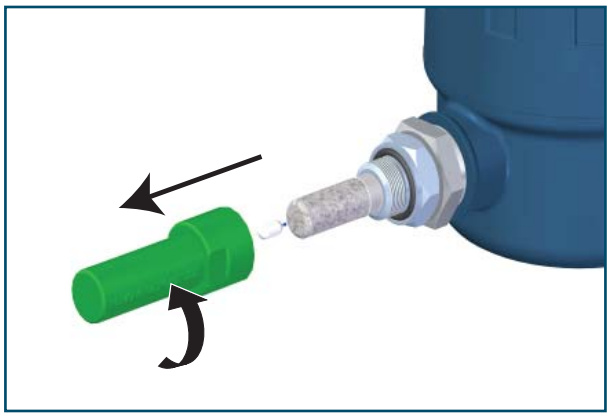


Figure 1 *Sensor Cap Removal*

### 2.1.1 Wall Mounting

The instrument is housed in an aluminum or stainless steel Exd enclosure suitable for wall or panel mounting. Two mounting points are available with ø7mm clearance holes on fixing centers 127mm apart. Use 2 off max 6.5mm diameter mounting fasteners with a minimum length of 35mm.

The enclosure provides environmental ingress protection IP66/NEMA4 and should be mounted vertically in a location free of any appreciable vibration. It is good engineering practise to place it in a shaded position to prevent heating effects through solar radiation.

Conduit entries can accept connection for threaded rigid metal conduit or other wiring methods in accordance with Article 501 of the National Electrical Code ANSI/NFPA 70-2011 and IEC/EN 60079-14:2008.

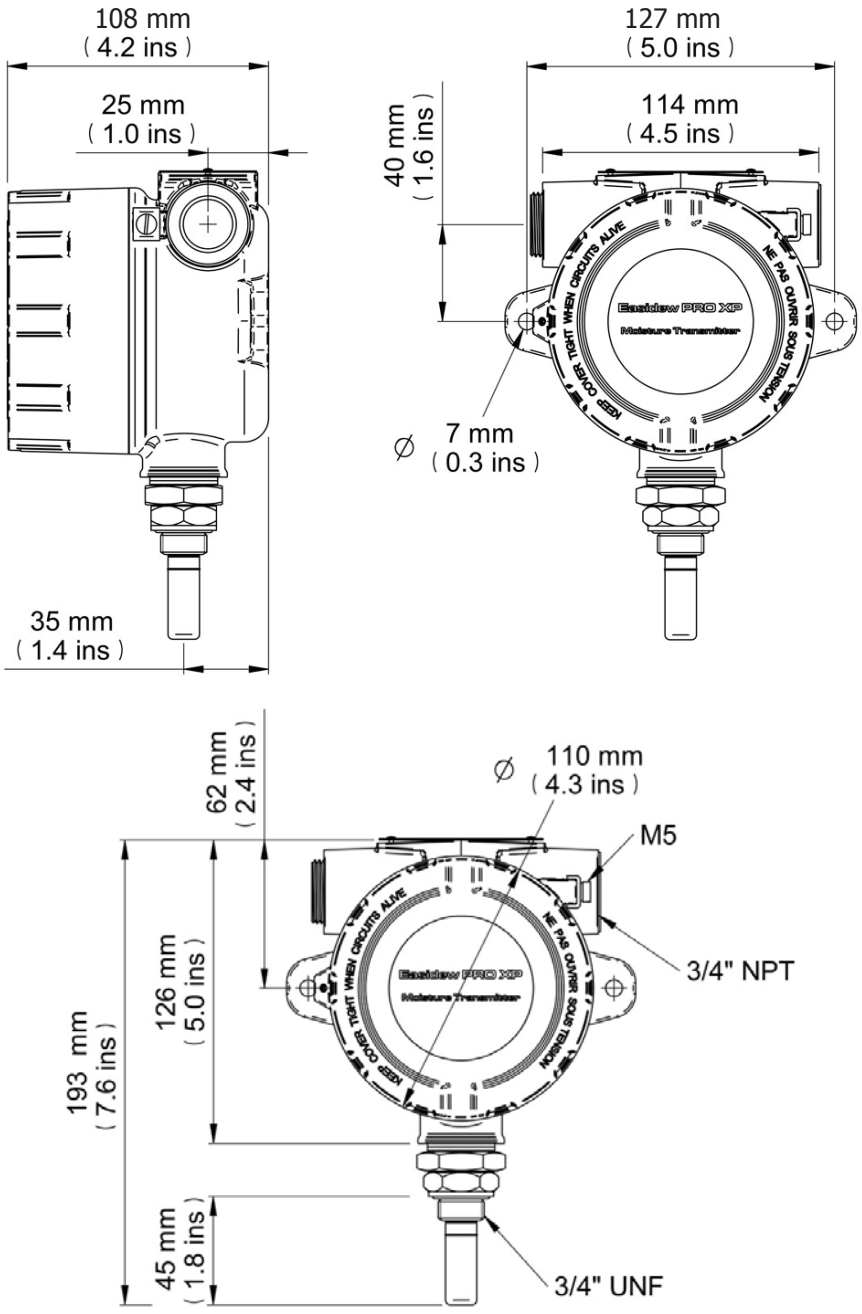



Figure 2 *Dimensions Easidew PRO XP EX1 (Non-Display) - Wall Mounting*

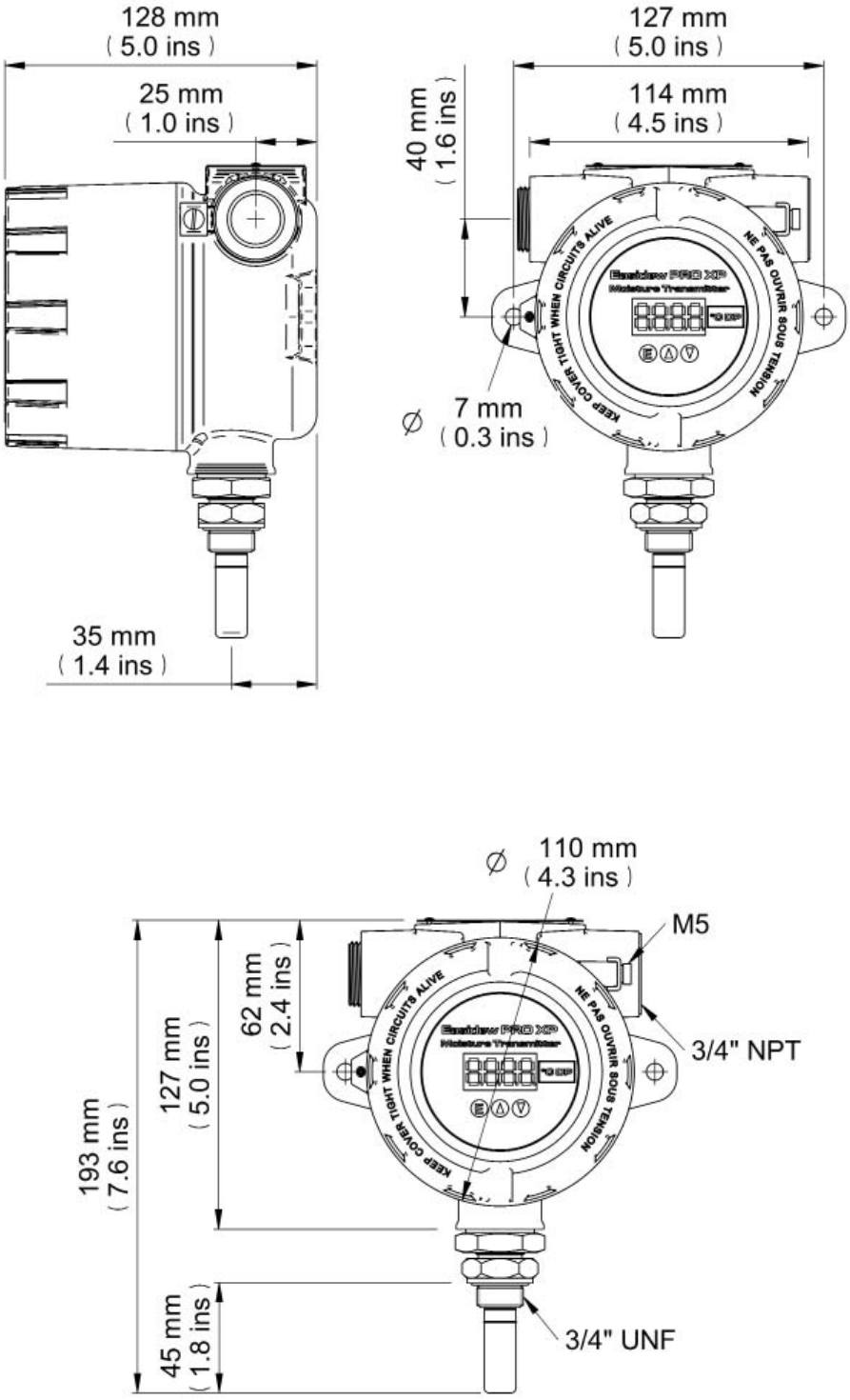



Figure 3 *Dimensions Easidew PRO XP EX2 (Display) - Wall Mounting*

### 2.1.2 Pipe Mounting

The Easidew PRO XP can be supplied with a pipe mounting bracket as an optional accessory, which allows the transmitter to be installed onto pipework up to 51mm diameter.

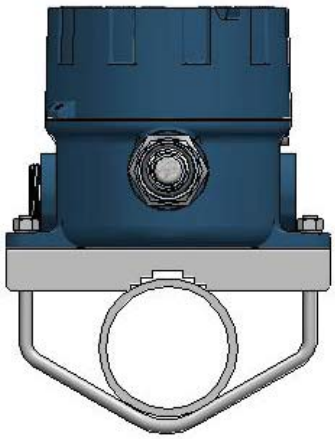


Figure 4 *Transmitter Mounting - Pipe or Duct*

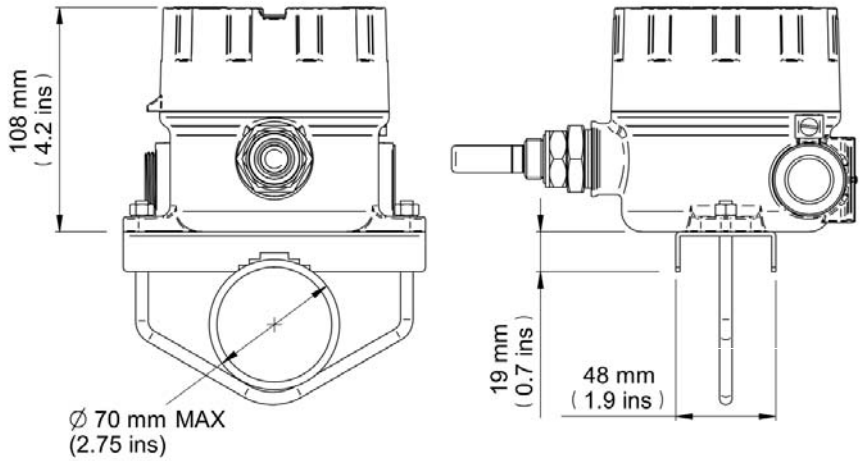



Figure 5 *Dimensions Easidew PRO XP EX1 (Non-Display) - Pipe or Duct*

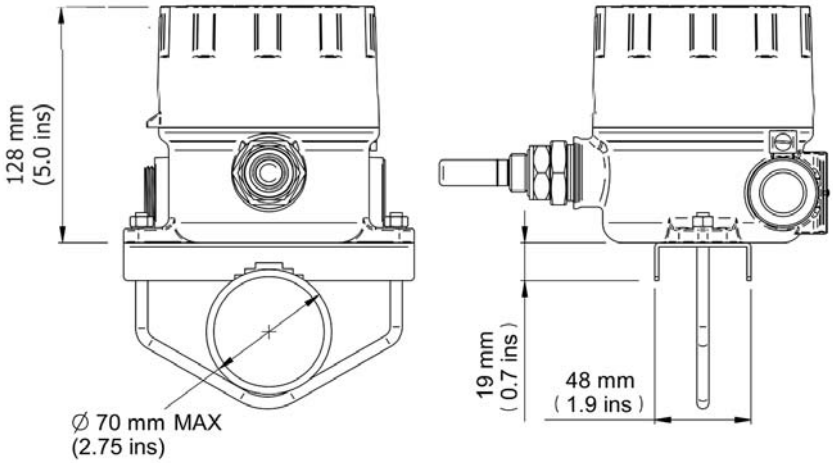



Figure 6 *Dimensions Easidew PRO XP EX2 (Display) - Pipe or Duct*

## 2.2 Gas Media Process Connection

The Easidew PRO XP transmitter can be mounted in any orientation for the following:

- inserted into a pipe or duct
- inserted into a flow-through sample block (optional).

It can be operated up to 45 MPa (450 barg/6500 psig) when fitted correctly.

If the installation is NOT into a Michell sample block please take note of the following to ensure correct installation is undertaken.

**The following procedure must be carried out by a qualified engineer to ensure the safe operation of the pressure system.**

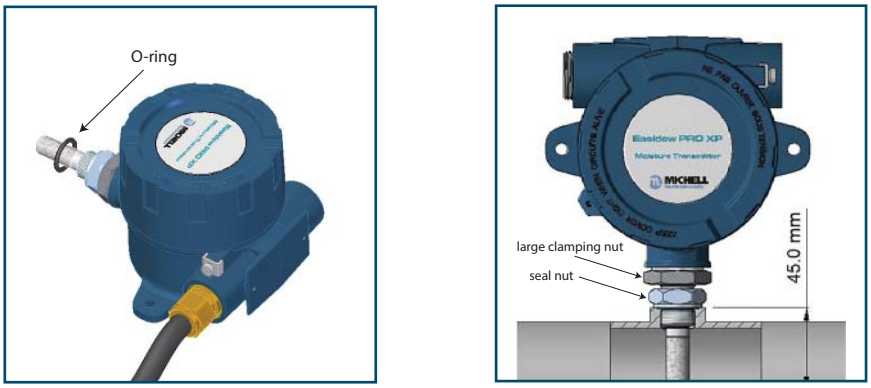



Figure 7 *Transmitter Direct Mounting*

1. Ensure the O-ring is located correctly within the O-ring groove of the process connection and that there is no contamination or debris on its exposed surfaces.
2. Ensure that the sealing face of the transmitter mounting is normal to the thread (0.08mm/25mm run).
3. Ensure that the O-ring mating sealing surface is 0.8 Ra (0.8µm) or better.
4. Ensure that the mating connection thread is cut to the correct size (¾" UNF x 16) with a minimum chamfer of 1mm.
5. Screw the transmitter into the sample block and, whilst holding the flats on the block, tighten the seal nut to 40Nm (29.5 lbf-ft) to compress the O-ring.

6. Rotate the enclosure to the desired position (up to 360° available) and tighten the large clamping nut (32mm 1¼") to 10Nm (7.4 lbf-ft) to ensure dowty seal is correctly compressed for environmental protection (see Appendix B.1).

The recommended fluid flow rate, when mounted in the optional sample block, is 1 to 5 Nl/min (2.1 to 10.6 scfh). However, for direct insertion applications, the flow can be from static to 10 m/sec (32.8 fps).

**The Easidew PRO XP is fitted with a mechanical stop to prevent the accidental over-rotation of the enclosure assembly that would damage the internal sensor wiring.**

## 2.3 Liquid Media Process Connection

When mounting the Easidew PRO XP into a liquid sample the flow rate must be between 0.1 and 0.3 l/min.

Consideration should be taken regarding draining the sample fluid at times when the transmitter needs to be removed for maintenance or calibration.

It would be beneficial for the Easidew PRO XP to be mounted in a vertical position (with the sensor pointing down) to allow for easy removal when necessary.

### 2.3.1 Sample Block (Optional)

**The following procedure must be carried out by a qualified engineer to ensure the safe operation of the pressure system.**

1. Remove the green protective cap and desiccant capsule.
2. Ensure the O-ring (see *Figure 8)* is located correctly within the O-ring groove of the process connection and there is no contamination or debris on its exposed surfaces.
3. Screw the transmitter into the sample block and, whilst holding the flats on the block, tighten the seal nut to 40Nm (29.5 lbf-ft) to compress the O-ring.
4. Rotate the enclosure to the desired position (up to 360° available) and tighten the large clamping nut (32mm 1¼") to 10Nm (7.4 lbf-ft) to ensure dowty seal is correctly compressed for environmental protection (see Appendix B.1).

Figure 8 *Transmitter Mounting - Sample Block*

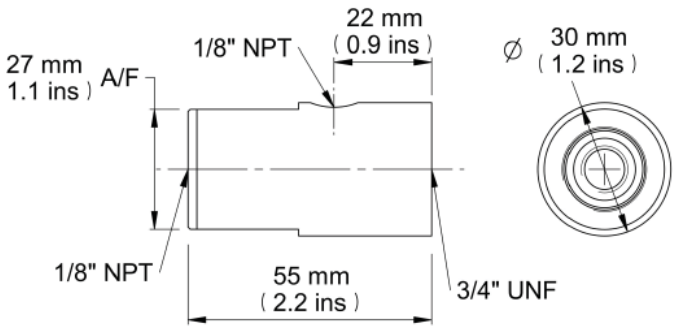



Figure 9 *Outline Dimensions - Sample Block*

## 2.4 Preparation of the Sensor Cable

**The sensor cable is not supplied with the Easidew PRO XP, but there are 3 off bootlace ferrules supplied. Maximum conductor size is 0.75mm².**

Correct preparation of the cable conductors is essential to ensure a reliable connection to the sensor terminals.

1. Strip the insulation from each conductor to 8mm, without damaging any wire strands.
2. Using a crimp tool such as the CK 3682 (RS 343-8824), correctly attach each ferrule.

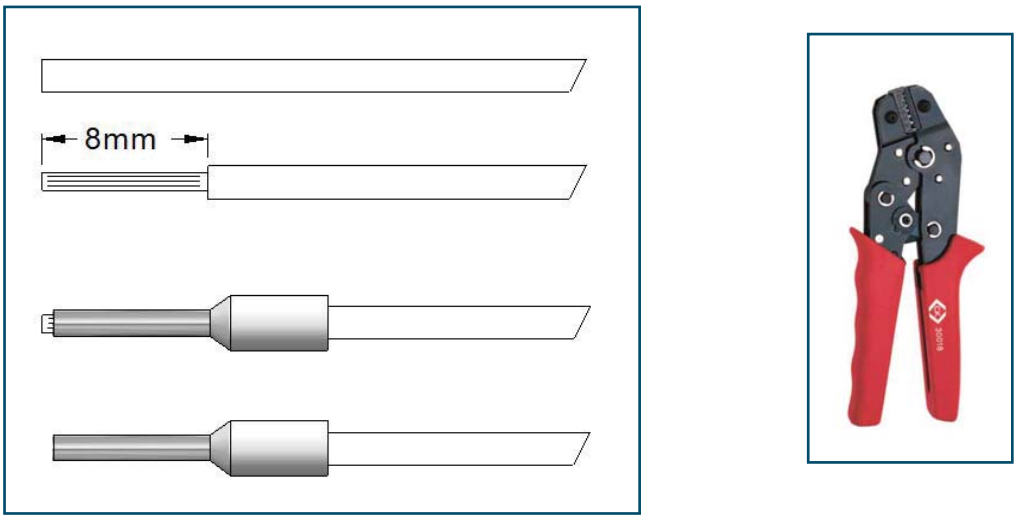



Figure 10 *Wire and Crimp Details*

### 2.4.1 Terminal Block Connection - Easidew PRO XP EX1 (Non-Display)

1. Remove the enclosure lid by carefully unscrewing anti-clockwise
2. Remove the 4-way terminal block from its header on the pcb, being careful not to put any strain onto the earth wire already attached.
3. Mount each of the power and return wires into positions 2 and 4 as shown, and tighten with a flat-blade screwdriver (min torque 0.25Nm (0.2 lbf-ft)).

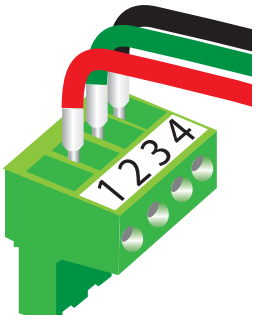



Figure 11 *Terminal Block Connection - Easidew PRO XP EX1 (Non-Display)*

4. Plug the terminal block back into the header.

5. Re-fit the enclosure lid in a clockwise direction until it stops and secure in place by tightening the grub screw with a 1.5mm A/F Allen key.

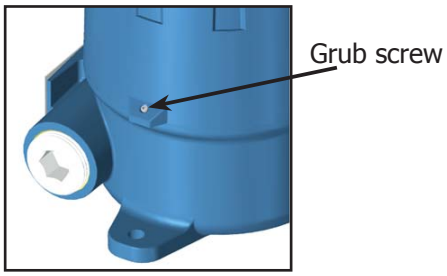
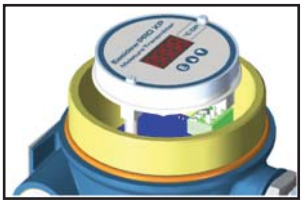


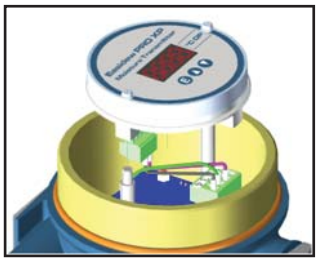

Figure 12 *Grub Screw*

### 2.4.2 Terminal Block Connection - Easidew PRO XP EX2 (Display)

1. Remove the enclosure lid by carefully unscrewing anti-clockwise.



2. Lift off the display meter and integral mounting bracket from the 2 mounting posts and pull out the terminal block from the underside.



3. Mount each of the power and return wires into positions +VE and -VE as shown, and tighten with a flat bladed screwdriver (min torque 0.25Nm).

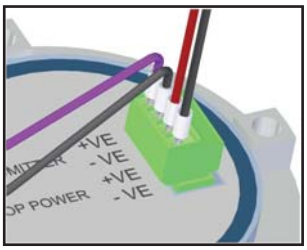



Figure 13 *Terminal Block Mounting - Easidew PRO XP EX2 (Display)*

4. Plug the terminal block back into the underside of the display meter and drop it back onto its posts. Align the display meter in relation to the housing, as required.

5. Re-fit the enclosure lid in a clockwise direction until it stops and secure in place by tightening the grub screw with a 1.5mm A/F Allen key.

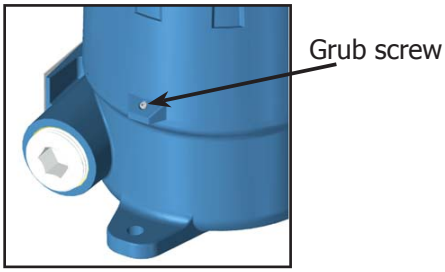



Figure 14 *Grub Screw*

## 2.5 Electrical Schematic

### 2.5.1 Easidew PRO XP EX1 (Non-Display)

**NOTE: To ensure compliance with EMC standards, ensure that the screen of the power supply/signal cable or the power supply/signal conduit is connected to ground.**

**With the cable entry option, a conductive cable entry gland is recommended, allowing the transmitter housing to be earthed via the cable screen connection.**

**Always connect the 4-20 mA return signal to a suitable load (see *Figure 15)* before the power is applied. Without this connection, the transmitter may be damaged if allowed to operate for prolonged periods.**

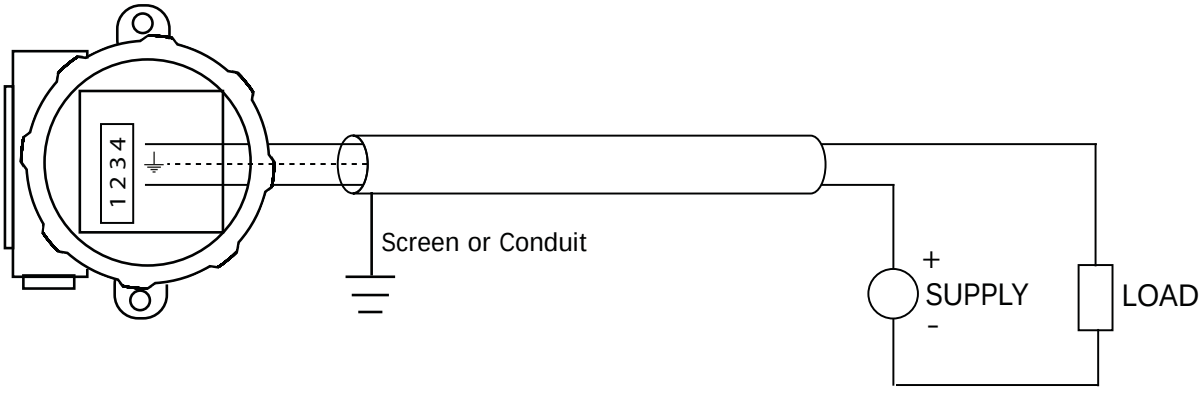



Figure 15 *Electrical Schematic - Easidew PRO XP EX1 (Non-Display)*

### 2.5.2 Easidew PRO XP EX2 (Display)

**NOTE: To ensure compliance with EMC standards, ensure that the screen of the power supply/signal cable or the power supply/signal conduit is connected to ground.**

**With the cable entry option, a conductive cable entry gland is recommended, allowing the transmitter housing to be earthed via the cable screen connection.**

**Always connect the 4-20 mA return signal to a suitable load (see *Figure 16)* before the power is applied. Without this connection, the transmitter may be damaged if allowed to operate for prolonged periods.**

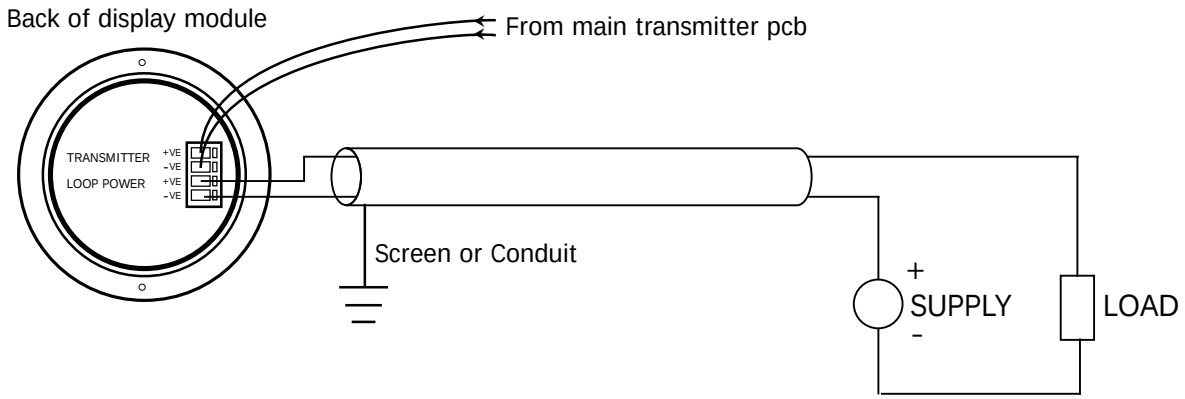



Figure 16 *Electrical Schematic - Easidew PRO XP EX2 (Display)*

### 2.5.3 Electrical Boundaries

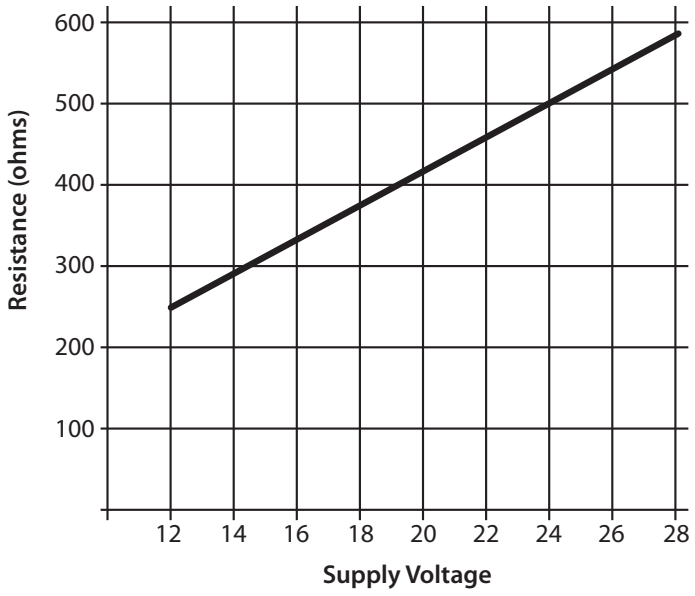



Figure 17 *Maximum Load of Easidew PRO XP - Including Cable Resistance*

# 3 OPERATION

## 3.1 Measurement and Configuration

The Easidew PRO XP can be configured to provide an output of 4-20 mA (2-wire connection) for the following:

| | |
|---|---|
| Dew point | -110 to +20°C (-166 to +68°Fdp) |
| Moisture content in gas | 0 - 3000 $ppm_V$ (and equivalent $mg/m^3$, lbs/MMSCF) |
| Moisture content in liquids | 0 - 3000 $ppm_W$ |

The Easidew PRO XP is factory configured either as °Cdp (default) or °Fdp (North America). The Easidew PRO XP can be re-configured by the customer, using the Easidew XP Communications Kit (XP-CK) and Easidew Application Software. The Easidew Communications Kit can be purchased from Michell Instruments or a local representative. For a free copy of the Application Software contact Michell Instruments' UK office (see www.michell.com for details of Michell's contact information).

For moisture content in gas, the calculation from the measured dew point is assumed to be at atmospheric pressure. Alternatively, a fixed gas pressure needs to be programmed into the Easidew PRO XP.

For moisture content measurement in liquid, the Easidew PRO XP requires the saturation constant of the liquid to be programmed into the transmitters, either at the factory or by the customer using the Application Software.

The transmitter requires a 6-point look-up table for saturation constants up to 3000 $ppm_W$ over the temperature range 0 to +50°C (+32 to +122°F). Saturation constants for 8 common liquids can be programmed into the Easidew PRO XP via the Application Software. Alternatively, the user can program saturation constants manually. The Application Software Help file provides detailed instructions on how to perform this task.

**Easidew PRO XP EX2 (Display) Only**

The display meter is simple in design and is a slave display to the measurement and configuration of the main transmitter pcb. It can be scaled linearly equating to the circulating 4-20 mA signal output from the main transmitter pcb.

In order to re-configure the display, the enclosure lid should be removed by unscrewing it in an anti-clockwise direction.

**Care should be taken when unscrewing and replacing the enclosure lid as the threads form an important part of the Ex compliance regulations and therefore must not be damaged.**

**The lid must be replaced after using the display meter and the grub screw tightened.**

A full explanation of the operation and configuration of the integral display meter is detailed in Appendix D.

## 3.2 Sampling Hints

Operation is very simple, assuming the following installation techniques are adhered to:

**Be Sure the Sample is Representative of the Gas Under Test:**

The sample point should be as close to the critical measurement point as possible. Also, never sample from the bottom of a pipe as entrained liquids may be drawn into the sensing element.

**Minimize Dead Space in Sample Lines:**

Dead space causes moisture entrapment points, increased system response times and measurement errors, as a result of the trapped moisture being released into the passing sample gas and causing an increase in partial vapor pressure.

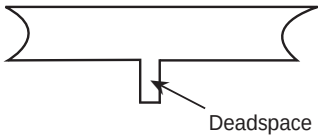



Figure 18 *Indication of Dead Space*

**Remove Any Particulate Matter or Oil from the Gas Sample:**

Particulate matter at high velocity can damage the sensing element and similarly, at low velocity, they may 'blind' the sensing element and reduce its response speed. If particulate, such as degraded desiccant, pipe scale or rust is present in the sample gas, use an in-line filter, as a minimum level of protection. For more demanding applications Michell Instruments offers a range of sampling systems (for more information contact www.michell.com).

**Use High Quality Sample Tube and Fittings:**

Michell Instruments recommends that, wherever possible, stainless steel tubing and fittings should be used. This is particularly important at low dew points since other materials have hygroscopic characteristics and adsorb moisture on the tube walls, slowing down response and, in extreme circumstances, giving false readings. For temporary applications, or where stainless steel tubing is not practical, use high quality thick walled PTFE tubing and work within the maximum pressure rating of this tubing.

**Position Transmitter away from Heat Source:**

It is recommended, as good instrumentation practice, that the transmitter is placed away from any heat source to avoid adsorption/desorption (particularly solar radiation during daylight hours).

# 4 MAINTENANCE

**The power to the enclosure must be turned off before any work is carried out in the measurement system enclosure.**

**Observe de-energize durations.**

**Gas line connections to the measurement system must be isolated and de-pressurized before any work commences.**

### Calibration

Routine maintenance of the Easidew PRO XP is confined to regular re-calibration by exposure of the transmitter to sample gases of known moisture content to ensure that the stated accuracy is maintained. Calibration services traceable to the UK *National Physical Laboratory* (NPL) and the US *National Institute of Standards and Technology* (NIST) are provided by Michell Instruments.

Michell Instruments offers a re-calibration service to suit specific needs. A Michell representative can provide detailed, custom advice (for Michell Instruments' contact information go to www.michell.com).

### Sensor Guard Replacement

The sensor is supplied with either a stainless steel sintered or HDPE guard.

The stainless steel guard provides >80µm protection to the dew-point sensor, whereas the HDPE protects to >10µm. It is designed to show any contamination and the guard should be changed if the surface becomes discolored.

When replacing the guard, care should be taken to minimize touching the guard which should be handled by the threaded part. Replacement guards can be obtained by contacting Michell Instruments (www.michell.com) or your local distributor.

**Please note the sensor tile should not be touched.**

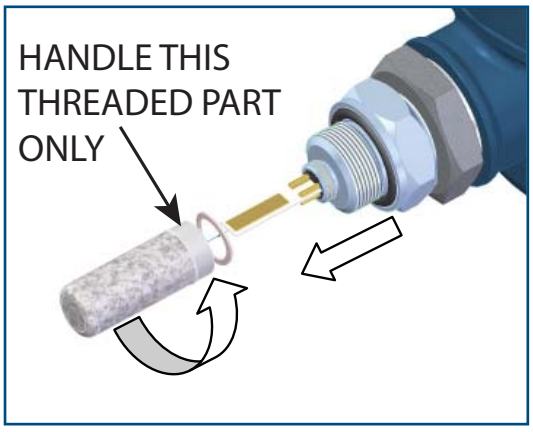



Figure 19 *Replacement of Sensor Guard*

# Appendix A

# Technical Specifications

## Appendix A Technical Specifications

| Product | Easidew PRO XP for Gases | Easidew PRO XP LQ for Liquids |
|---|---|---|
| **Performance Specifications** | | |
| Measurement Range | -110 to +20°Cdp (-166 to +68°Fdp)<br>-100 to +20°Cdp (-148 to +68°Fdp) | 0 to 1000 $ppm_W$<br>Non-standard available upon request |
| Accuracy | ±1°C dew point (+20 to -60°C) (+68 to -76°F)<br>±2°C dew point (-60 to -110°C) (-76 to -166°F) | |
| Response Time | 5 mins to T95 (dry to wet) | |
| Repeatability | 0.5°Cdp (±0.9°Fdp) | |
| Calibration | Traceable 13-point calibration certificate | |
| **Electrical Specifications** | | |
| Output Signal | 4-20 mA (2-wire connection) current source<br>User-configurable over range | |
| Output | Dew point or moisture content in $ppm_V$ | Moisture content |
| Analog Output Scaled Range | Dew point -110 to + 20°C (-166 to +68°F)<br>Moisture content in gas:<br>0 to 3000 $ppm_V$<br>Non-standard $mg/m^3$, lbs/MMSCF, natural gas | Moisture content in liquid:<br>0 to 1000 $ppm_W$<br>Non-standard available upon request |
| Supply Voltage | 14 to 28 V DC | |
| Load Resistance | Max 250 Ω @ 14 V (500 Ω @ 24 V) | |
| Current Consumption | 23 mA (depending on signal output) | |
| Saturation Constants (for moisture in liquids measurements only) | | 6-point look-up table for saturation constants up to 1000 $ppm_W$ over the temperature range 0 to +50°C (+32 to +122°F)<br>Saturation constants for 8 common liquids can be programmed into the Easidew PRO XP LQ via the Application Software<br>Alternatively, the user can program saturation constants manually |
| CE Conformity | 2004/108/EC, 94/9/EC ATEX directive | |
| **Operating Specifications** | | |
| Operating Temperature | -20 to +70°C (-4 to +158°F) | |
| Operating Pressure | 45 MPa (450 barg / 6526 psig) max | |
| Flow Rate | 1 to 5 Nl/min (2.1 to 10.6 scfh) mounted in standard sampling block<br>0 to 10 m/sec (0 to 32.8 fps) direct insertion | |
| Temperature Coefficient | Temperature compensated across operating temperature range | |

| Mechanical Specifications | |
|---|---|
| Ingress Protection | IP66 in accordance with standard BS EN 60529:1992<br>NEMA 4 in accordance with standard NEMA 250-2003 |
| Explosion and Flameproof Area Certificates | **ATEX:** II 2 GD Exd [ia] IIC T6 Gb<br>EX tb IIIC T80°C Db IP66<br>Tamb -20°C to +70°C<br><br>**IECEx:** Exd [ia] IIC T6 Gb<br>Ex tb IIIC T80°C Db IP66<br>Tamb -20°C to +70°C<br><br>**cCSAus:** CLS I, Div1, GRPS ABCD<br>CLS II & III, Div1, GRPS EFG<br>CLS I, Zone 1 AEx/Exd [ia] IIC T6<br>Zone 21, AEx/Ex tb IIIC T80°C<br>Tamb = -20°C to +70°C IP66<br><br>**TC TR Ex Certificate:** Pending<br><br>**INMETRO:** Pending |
| Russian Pattern Approval | [GOST-R, Pending] |
| Canadian Pressure Vessel Cert | C.R.N. - all Canadian provinces |
| Housing Material | **Standard:** Aluminum (copper free), epoxy and polyurethane powder coated, blue RAL 5009<br>**Optional:** 316 stainless steel (Housing supplied with EN10204 3.1 material certification if option F2 requested) |
| Dimensions | Refer to diagram in Section 2.1.1 |
| Filter (Sensor Protection) | **Standard:** Stainless steel sintered guard (for protection against fine particulate >80µm)<br>**Optional:** HDPE guard (for protection against fine particulate >10µm) |
| Process Connection & Material | 3/4" - 16 UNF with recessed Viton® O-ring<br>316 stainless steel |
| Weight | Aluminum: 1.6kg (3.5lbs)<br>316 stainless steel: 2.4kg (5.3lbs) |
| Electrical Connections | Dual 3/4" NPT gland |
| **Display Meter** | |
| Programmable Display Range | **Optional**: -1999 to +9999 |
| Programmable Decimal Point | **Optional**: 0 to 3 decimal places |
| Overload Limits | **Optional**: 3.6 mA & 20.4 mA |
| Programmable Display Scales | **Optional**: °C, °F, %, No scale |

# Appendix B

# Hazardous Area Certification

## Appendix B Hazardous Area Certification

The Easidew PRO XP is certified compliant to the ATEX Directive (2014/34/EU), and IECEx for safe use within a hazardous area and has been assessed so by SIRA Certification.

This product conforms to the Standards:

| | |
|---|---|
| EN60079-0:2012 | IEC60079-0:2011 |
| EN60079-1:2007 | IEC60079-1:2007 |
| EN60079-11:2012 | IEC60079-11:2011 |
| EN60079-31:2009 | IEC60079-31:2008 |

and is attributed with a product certification code:

**II 2 GD Exd [ia] IIC T6 Gb**
**Ex tb IIIC T80°C Db IP66**
**Tamb -20°C to +70°C**

| | |
|---|---|
| ATEX Certificate Number : | SIRA14ATEX1007X |
| IECEx Certificate Number: | IECEx SIR 14.0004X |

The Easidew PRO XP is also certified by CSA (cCSAus) for use in Hazardous Locations:

**CLS I, Div 1, GRPS ABCD**
**CLS II and III, Div 1, GRPS EFG**
**CLS I, Zone 1, AEx/Exd [ia] IIC T6**
**Zone 21, AEx/Ex tb IIIC T80°C**
**Tamb = -20°C to +70°C IP66**

CSA Certificate Number: 2679645

Pending: TC TR Ex - Certificate for Russia, Kazakhstan & Belarus.
Pending: INMETRO - Brazil

**These certificates can be viewed or downloaded from our website at: http://www.michell.com**

### B.1 Special Conditions of Use

i. The equipment has been assessed with a $U_m$ of 28V and shall be installed in accordance with the latest installation requirements of IEC/EN 60079-14 for intrinsically safe equipment for EPL "Gb".

ii. The transmitter shall not be installed in such a manner that the sensing probe is in a dust environment.

iii. WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD. The equipment must only be wiped with a damp cloth.

iv. When installing the transmitter a torque of 10 Nm must be applied to the sensor body/housing positioning lock nut to secure it. See manufacturer's instructions for further details.

# Appendix C

# EC Declaration of Conformity

## Appendix C EC Declaration of Conformity

MICHELL Instruments

# EU Declaration of Conformity

Manufacturer: Michell Instruments Limited

Address: 48 Lancaster Way Business Park
Ely, Cambridgeshire
CB6 3NW. UK.

CE

Equipment Type: **Easidew PRO XP -Ex1 & -Ex2 Dew-point Transmitter**

**Directive 2014/34/EU ATEX**

Provisions of the Directive fulfilled by the Equipment:

**Group II Category 2 GD** **Ex d [ia] IIC T6 Gb**
**Ex tb IIIC T80°C Db IP66**
**Tamb -20°C to +70°C**

Notified Body for EC-Type Examination
**SIRA Certification, Chester. UK. Notified Body No. 0518**

Notified Body for Production (QAN & QAR):
**Baseefa, Buxton. UK. Notified Body No. 1180**

EC-Type Examination Certificate:
**Sira14ATEX1007X**

Standards used:
**EN 60079-0:2012**
**EN60079-1:2007**
**EN 60079-11:2012**
**EN60079-31:2009**

**IECEx**

Certificate of Conformity No.

**IECEx SIR 14.0004X (Issue No. 0)** **Ex d [ia] IIC T6 Gb**
**Ex tb IIIC T80°C Db IP66**
**Tamb -20°C to +70°C**

Standards used:
**IEC60079-0:2011**
**IEC60079-1:2007**
**IEC 60079-11:2011**
**IEC60079-31:2008**

**Other Directives**
2014/30/EU EMC Directive
Is in conformity with the following Standard(s) or Normative Document(s):
EN61326-1:2006 *Electrical equipment for measurement, control and laboratory use - EMC requirements Class B (emissions) and Industrial Locations (immunity).*
2011/65/EU Restriction of Hazardous Substances Directive (RoHS2)

On behalf of the above named company, I declare that, on the date that the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.

Andrew M.V. Stokes, Technical Director. Michell Instruments Ltd. Ely, UK.
July 2014

ECD Easidew PRO XP Issue 02

# Appendix D

# Fully Programmable Loop Powered 4-Digit LED Display Meter

## Appendix D Fully Programmable Loop Powered 4-Digit LED Display Meter

In order to re-configure the display meter, the enclosure lid should be removed by unscrewing it in an anti-clockwise direction.

**Care should be taken when unscrewing and replacing the enclosure lid as the threads form an important part of the Ex compliance regulations and therefore must not be damaged.**

**The lid must be replaced after using the display meter, and the grub screw tightened.**

### D.1 Display Meter Parameter Limits

The programmable display meter is designed for current loops of 4-20 mA. It is powered from the loop and does not require any other supply. The display can be configured by set-up menus to show physical values measured by the sensor.

Display will indicate low (-**LO**-) when the input current is lower than the overload limit (3.6 mA).

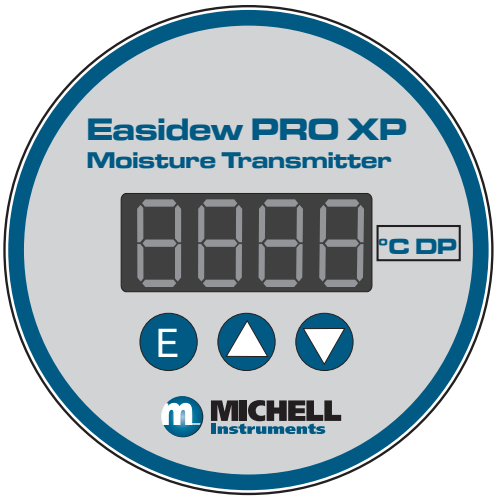
Display will indicate high (-**HI**-) when the input current is higher than overload limit (20.4 mA).

Display will indicate (----) when displayed value is <1999 or >9999.

### D.2 Display Meter Operating Range

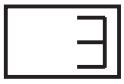
| | |
|---|---|
| Operating Range | from 3.6 to 20.4 mA |
| Maximum Voltage Drop Out | 3.7 V |
| Display LED | 4 digits, height 9.5mm |
| Indication Limits | from -1999 to 9999 |
| Variable Sampling Time | from 1 to 10 seconds |

### D.3 Display Meter View

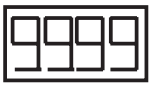


## D.4 Re-Configuration Steps

To enter menu press the **E** button for 2 seconds.

| Displayed Text | Description |
|---|---|
| | **Setting decimal point DP**<br>Press **E** button<br>Press ▲ and ▼ buttons to change decimal position<br>1.234 (value 3)<br>12.34 (value 2)<br>123.4 (value 1)<br>1234 to decimal point (value 0)<br>Press **E** button |
|  | |

| Displayed Text | Description |
|---|---|
| | **Setting low limit Zero (set-up of the low limit)**<br>Press **E** button<br>Press ▲ and ▼ buttons to change the value between -1999 and 9999<br>*(the value chosen will be displayed at input current of 4 mA-point low)*<br>Press **E** button |
| | |

| Displayed Text | Description |
|---|---|
| | **Setting high limit SPAN (setup of the high limit)**<br>Press **E** button<br>Press ▲ and ▼ buttons to change the value between -1999 and 9999<br>*(the value chosen will be displayed at input current of 20 mA-point high)*<br>Press **E** button |
|  | |

| Displayed Text | Description |
|---|---|
| | **Setting overload limit Li (set-up of the overload limit)**<br>Press **E** button<br>Press ▲ and ▼ buttons to change the value<br>0 for 4-20 mA<br>the display shows -**LO**- when current < 4 mA<br>and -**HI**- when current >20 mA<br>1 for 3.6 mA - 20.4 mA<br>the display shows<br>-**LO**- when current <3.6 mA<br>-**HI**- when current >20.4 mA<br>Press **E** button |

| Displayed Text | Description |
|---|---|
| St | **Setting sampling rate St**<br>Press **E** button<br>Press ▲ and ▼ buttons to change the sampling rate from 1 to 10 seconds<br>Press **E** button |

| Displayed Text | Description |
|---|---|
| Unit | **Set-up Engineering Unit**<br>Press **E** button<br>Press ▲ and ▼ buttons to select the unit<br>- **nonE** - for no unit on the display (factory default setting) see D.5<br>- °C, °F, K, %<br>*(There is a 6 second cycle*<br>*- measured value is displayed for 4 seconds*<br>*- the unit is displayed for 2 seconds)*<br>Press **E** button |

Exit from menu and save settings:

Press ▲ and ▼ buttons (possible from each page)

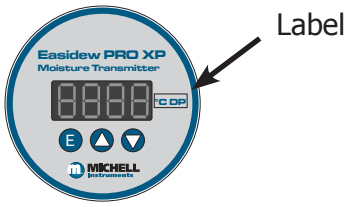
## D.5 Moisture Scaling Label

The Easidew PRO XP has 3 standard ranges and scales which are as follows:

**EA-XP-TX** -110 to +20°Cdp output range
-100 to +20°Cdp output range

**EA-XP-LQ-TX** 0-1000ppm$_W$

The EA-XP-TX units will be configured for the range/scale ordered (as above) and will constantly display the measured value. The display meter will have a stick-on label defining the scale in °C DP.



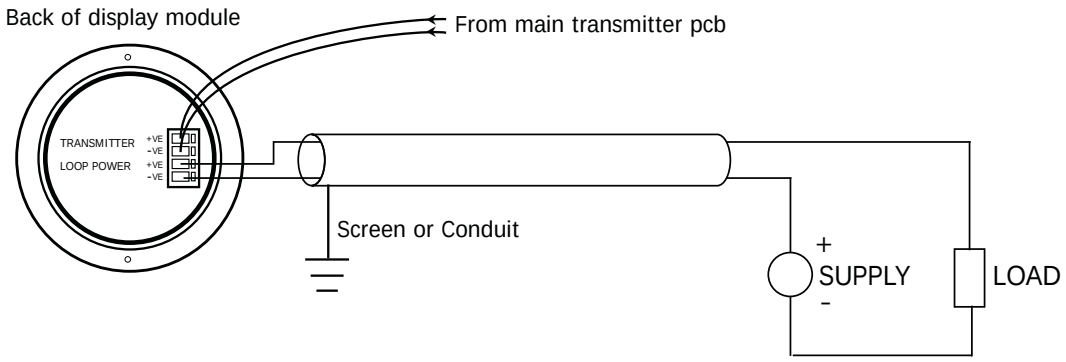

If ordered with a non-standard range/scale the unit could be set up with the following:

°F DP
lbs/MMSCF
ppm$_V$
ppm$_W$
mg/m$^3$

Alternatively, an Easidew PRO XP Communication Kit (EA-XP-CK) can be used to change the range/scale and this Kit will be shipped with its own manual and 2 additional sets of scaling labels so that the label can be changed as required.

## D.6 Technical Specifications - EX2 LED Display

The display meter is simple in design and is a slave display to the measurement and configuration of the main transmitter pcb. It can be scaled linearly equating to the circulating 4-20 mA signal output from the main transmitter pcb.




| | |
|---|---|
| **Performance** | |
| Reference Operating Condition | 25°C |
| Maximum Measured Error | 0.1% of the programmed range ± 1 digit |
| Influence of Ambient Temperature (temp drift) | 20 ppm / °C of measuring range at 20°C as reference temperature |
| Output Signal | 4-20 mA |
| Supply Voltage | 24 V (10 to 30 V) |
| Voltage Drop Out | 3.3 V at 4 mA and 3.7 V at 20 mA |
| Minimum Current of LED Activation | 3.6 mA |
| Digits | LED, 4 digits 7 segments, height 9.5mm |
| Display Characteristics | 6400ucd for If=10 mA |
| Storage Period | 10 years (non-powered) |
| **Operating Conditions** | |
| Ambient Temperature | -20 to +80°C (-4 to +176°F) |
| Storage Temperature | -30 to +80°C (-22 to +176°F) |
| **Functionality** | |
| Parameters | Zero, span, decimal, point, refresh rate, unit |
| Indication Limit | -1999 to +9999 |
| Programmable Range | -1999 to +9999 |
| Decimal Points Position | 0, 1, 2, 3 decimals |
| Overload Limits | From 3.6 to 20.4 mA |
| Refresh Rate | From 1 to 10 seconds |
| Unit | °C, °F, K, % in cycle: 4 second value - 2 second unit |
| **Mechanical Construction** | |
| Electrical Loop Connection | 2 terminals, max wire section 1mm$^2$ (16 AWG) |

# Appendix E

# Quality, Recycling & Warranty Information

# Appendix E Quality, Recycling & Warranty Information

## E.1 Pressure Equipment Directive (PED) 97/23/EC

The above Directive has been implemented in United Kingdom Law by the Pressure Equipment Regulations 1999.

The Regulations require that all pressure equipment and assemblies within the scope of the Pressure Equipment Directive must be safe when placed on the market or put into service.

Michell Instruments' products have been assessed and, as referenced against the Classification Charts detailed in Annex II of the Directive, do not fall into the requirements for CE marking compliance with the Pressure Equipment Directive.

Article 3, paragraph 3 states that any product containing a pressurized fluid that does not qualify for compliance should, nevertheless, be constructed with Sound Engineering Practice (SEP).

Michell Instruments attests here that its products have been designed, manufactured & tested to assure safe operation, and in accordance with Sound Engineering Practices.

## E.2 Recycling Policy

Michell Instruments is concerned with the protection of the environment. It is our commitment to reduce and eliminate from our operations, wherever possible, the use of substances which may be harmful to the environment. Similarly, we are increasingly using recyclable and/or recycled material in our business and products wherever it is practical to do so.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle responsibly. If batteries are not properly disposed of, these substances can cause harm to human health and the environment

The product that you have purchased may contain recyclable and/or recycled parts and we will be happy to provide you with information on these components if required. For further information please see the following sections.

## E.3 WEEE Compliance

**Directive 2012/19/EU 4 July 2012 on Waste Electronic and Electrical Equipment (WEEE)**

The Waste Electronic and Electrical Equipment (WEEE) Directive places rules upon European manufacturers of electrical and electronic equipment. The directives' aim is to reduce the impact that electronic devices have on the environment.

Michell Instruments is in full compliance with the WEEE Directive and is registered with an approved recycler (Registration No. WEE/JB0235YW) and treats the requirement of the directive and the protection of the environment with the utmost importance. All Michell Instruments' products are appropriately marked indicating their requirement for recycling.

It may be required to return certain instruments for treatment at the end of their working life.

Feb 2013

## E.4 RoHS2 Compliance

**Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011**

The Restriction of Hazardous Substances (RoHS) Directive places rules upon European manufacturers of electrical and electronic equipment. The directives' aim is to reduce the impact that electronic devices have on the environment.

According to the EC Directive 2002/95/EC, Michell Instruments' products qualify as Category 9, Control and Monitoring Equipment. Under the 2002/95/EC Directive, Category 9 products are exempt from compliance with the Directive.

However, the careful design of all Michell Instruments' products takes into consideration the requirements of the Directive and, wherever possible, compliance is achieved. All future products will be developed entirely using compliant materials. Furthermore, Michell Instruments is taking active steps to remove non-compliant materials and components from existing products wherever these may occur. Presently, none of the non-compliant materials are known to occur in Michell Instruments' products.

The new Directive 2011/65/EU (RoHS2) entered into force on 21 July 2011 and required all Member States to transpose the provisions into their respective national laws by 2 January 2013.

Under the provisions of the RoHS2 EU Directive 2011/65/EU (Article 3, [24]) defines 'Control and Monitoring Equipment' specifically as 'monitoring and control instruments designed exclusively for industrial or professional use'.

RoHS2 EU Directive 2011/65/EU states the closing date for compliance of any Control and Monitoring Equipment product sold into the EU market place as 22nd July 2017.

However, the careful design policy of all Michell Instruments' products continues to attain compliance in the shortest practical timescales and strives to ensure that less than 0.1% of total mass per product, of all non-compliant materials, appear within them. Michell Instruments continues to monitor suppliers and material sources to ensure that compliance of goods provided is maintained.

January 2013

## E.5 Warranty

Unless otherwise agreed, the Supplier warrants that, as from the date of delivery for a period of 12 months, the goods and all their component parts, where applicable, are free from any defects in design, workmanship, construction or materials.

The Supplier warrants that the services undertaken shall be performed using reasonable skill and care, and be of a quality conforming to generally accepted industry standards and practices.

Except as expressly stated, all warranties whether express or implied, by operation of law or otherwise, are hereby excluded in relation to the goods and services to be provided by the Supplier.

All warranty services are provided on a return to base basis. Any transportation costs for the return of a warranty claim shall reside with the Customer.

## E.6 REACH Compliance

Regulation (EC) No. 1907/2006
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Michell Instruments is a manufacturer of moisture measurement and gas analysis instrumentation and is a 'downstream' user of chemicals, as described by the EU Council Directive 76/769/EEC. The products we supply are not raw chemical products (goods).

Under normal and reasonably foreseeable circumstances of application, the goods supplied to you shall not contain or release any prohibited chemicals. No listed SVHC (Substances of Very High Concern) appear within products manufactured by Michell Instruments. Therefore the 0.1% mass per product, or total usage of 1 tonne/year, will never be exceeded. For these reasons we are neither required by obligation for registration nor for the creation of material safety data sheets (MSDS) for our products.

Our continued review of the SVHC Candidate List and latest additions is to ensure we remain compliant.

Michell Instruments maintains a hazardous material register in which MSDS data sheets are collated, and we will check that our suppliers will comply to REACH requirements for all materials and substances we use in the processes of our manufacturing.

In the unlikely event that any chemicals of concern appear in our products in quantities greater than 0.1% of total mass per product we will immediately inform you by correspondence according to the REACH Article 33 requirements. Our current appraisal is, however, that we do not expect or foresee such an incidence.

January 2013

## E.7 Calibration Facilities

Michell Instruments' calibration facilities are among the most sophisticated in the world and have been recognized for their excellence.

Traceability to the National Physical Laboratory (NPL) UK is achieved through our UKAS Accreditation (Number 0179). This covers dew point over the range -90 to +90°C (-130 to +194°F) and also Relative Humidity.

Dew-point calibrations are also traceable to the National Institute for Standards & Technology (NIST) USA over the range -75 to +20°C (-103 to +68°F).

**NOTE: Standard traceable calibration certificates for instruments and sensors are not issued under our UKAS accreditation. UKAS certificates are usually to special order and are clearly identified.**

## E.8 Return Policy

If a Michell Instruments' product malfunctions within the warranty period, the following procedure must be completed:

1. Notify a Michell Instruments' distributor, giving full details of the problem, the model variant and the serial number of the product.
2. If the nature of the problem indicates the need for factory service then the instrument should be returned to Michell Instruments, carriage prepaid, preferably in the original packaging, with a full description of the fault and the customer contact information.
3. Upon receipt, Michell Instruments will evaluate the product to determine the cause of the malfunction. Then, one of the following courses of action will be taken:
   - If the fault is covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.
   - If Michell Instruments determines that the fault is not covered under the terms of the warranty, or if the warranty has expired, an estimate for the cost of the repairs, at standard rates, will be provided. Upon receipt of the owner's approval to proceed, the product will be repaired and returned.

## E.9 Manufacturing Quality

Michell Instruments is registered with the British Standards Institute for Quality Assurance to:

BS EN ISO 9001: 2008

Rigorous procedures are performed at every stage of production to ensure that the materials of construction, manufacturing, calibration and final test procedures meet the requirements laid down by our BSI approved Quality System.

Please contact Michell Instruments (www.michell.com) if the product does not arrive in perfect working order.

# Appendix F

# Return Document & Decontamination Declaration

## Appendix F Return Document & Decontamination Declaration

### Decontamination Certificate

**IMPORTANT NOTE: Please complete this form prior to this instrument, or any components, leaving your site and being returned to us, or, where applicable, prior to any work being carried out by a Michell engineer at your site.**

| | | | | |
|---|---|---|---|---|
| Instrument | | | Serial Number | |
| Warranty Repair? | YES | NO | Original PO # | |
| Company Name | | | Contact Name | |
| Address | | | | |
| Telephone # | | | E-mail address | |
| Reason for Return /Description of Fault: | | | | |

| | | |
|---|---|---|
| Has this equipment been exposed (internally or externally) to any of the following? Please circle (YES/NO) as applicable and provide details below | | |
| Biohazards | YES | NO |
| Biological agents | YES | NO |
| Hazardous chemicals | YES | NO |
| Radioactive substances | YES | NO |
| Other hazards | YES | NO |
| Please provide details of any hazardous materials used with this equipment as indicated above (use continuation sheet if necessary) | | |
| Your method of cleaning/decontamination | | |
| Has the equipment been cleaned and decontaminated? | YES | NOT NECESSARY |

Michell Instruments will not accept instruments that have been exposed to toxins, radio-activity or bio-hazardous materials. For most applications involving solvents, acidic, basic, flammable or toxic gases a simple purge with dry gas (dew point <-30°C) over 24 hours should be sufficient to decontaminate the unit prior to return.
**Work will not be carried out on any unit that does not have a completed decontamination declaration.**

### Decontamination Declaration

I declare that the information above is true and complete to the best of my knowledge, and it is safe for Michell personnel to service or repair the returned instrument.

| | | | |
|---|---|---|---|
| Name (Print) | | Position | |
| Signature | | Date | |

MICHELL Instruments

F0121, Issue 2, December 2011

**NOTES:**

*Sensorik*
*Messtechnik*
A-8010 Graz, Riesstraße 146
Tel.: +43 316 40 28 05, Fax: 40 25 06
nbn
ELEKTRONIK
Handelsgesellschaft m.b.H.

**http://www.michell.com**